

## at1121exam\_practice EXAMPLE! DO NOT HAND IN FOR CREDIT (v1)

- If you are looking for a practice exam that you can hand in for credit:

<https://chadworley.github.io/algtwo2026/u04/1121/at1121exam/at1121exam.html>

### Question 1

Simplify the radical expressions.

$$\sqrt{28}$$

$$\sqrt{12}$$

$$\sqrt{45}$$

$$\frac{\sqrt{2 \cdot 2 \cdot 7}}{2\sqrt{7}}$$

$$\frac{\sqrt{2 \cdot 2 \cdot 3}}{2\sqrt{3}}$$

$$\frac{\sqrt{3 \cdot 3 \cdot 5}}{3\sqrt{5}}$$

### Question 2

Find all solutions to the equation below:

$$10((x+8)^2 - 7) = 90$$

First, divide both sides by 10.

$$(x+8)^2 - 7 = 9$$

Then, add 7 to both sides.

$$(x+8)^2 = 16$$

Undo the squaring. Remember the plus-minus symbol.

$$x+8 = \pm 4$$

Subtract 8 from both sides.

$$x = -8 \pm 4$$

So the two solutions are  $x = -4$  and  $x = -12$ .

### Question 3

By **completing the square**, find both solutions to the given equation. *You must show work for full credit!*

$$x^2 - 6x = 40$$

$$x^2 - 6x + 9 = 40 + 9$$

$$x^2 - 6x + 9 = 49$$

$$(x - 3)^2 = 49$$

$$x - 3 = \pm 7$$

$$x = 3 \pm 7$$

$$x = 10 \quad \text{or} \quad x = -4$$

### Question 4

A quadratic polynomial function is shown below in standard form.

$$y = 2x^2 - 12x + 9$$

Express the function in **vertex form** and identify the **location** of the vertex.

From the first two terms, factor out 2 .

$$y = 2(x^2 - 6x) + 9$$

We want a perfect square. Halve -6 and square the result to get 9 . Add and subtract that value inside the parentheses.

$$y = 2(x^2 - 6x + 9 - 9) + 9$$

Factor the perfect-square trinomial.

$$y = 2((x - 3)^2 - 9) + 9$$

Distribute the 2.

$$y = 2(x - 3)^2 - 18 + 9$$

Combine the constants to get **vertex form**:

$$y = 2(x - 3)^2 - 9$$

The vertex is at point  $(3, -9)$ .